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ATTORNEY DOCKET NO. 502972-PCT-US-C

CLIENT REF. NO. 03-2285C-US

U.S. APPLICATION NO. 60/516,148

**TRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US)
CONCERNING A FILING UNDER 35 USC 371 AND 37 CFR 1.491**

INTERNATIONAL APPLICATION NO.
PCT/US2004/35651

INTERNATIONAL FILING DATE
October 27, 2004

PRIORITY DATE CLAIMED
October 31, 2003

TITLE OF INVENTION METHOD AND APPARATUS FOR CONTROLLING EXHAUST GAS RECIRCULATION AND START OF COMBUSTION IN
RECIPROCATING COMPRESSION IGNITION ENGINES WITH AN IGNITION SYSTEM WITH IONIZATION MEASUREMENT

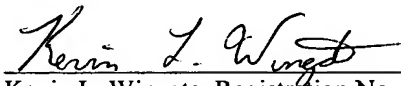
APPLICANT(S) FOR DO/EO/US Ed VanDyne and Mark R. Woolston

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 USC 371 and 37 CFR 1.491.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 USC 371 and 37 CFR 1.491.
3. ☐ This is an express request to begin national examination procedures (35 USC 371(f)).
4. ☐ The US has been elected by the expiration of 19 months from the priority date (PCT Article 31).
5. ☒ A copy of the International Application as filed (35 USC 371(c)(2))
 - a. ☐ is attached hereto (required only if not communicated by the International Bureau).
 - b. ☐ has been communicated by the International Bureau.
 - c. ☒ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☐ An English language translation of the International Application as filed (35 USC 371(c)(2)).
7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 USC 371(c)(3))
 - a. ☐ are attached hereto (required only if not communicated by the International Bureau).
 - b. ☐ have been communicated by the International Bureau.
 - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
 - d. ☒ have not been made and will not be made.
8. ☐ An English language translation of the amendments to the claims under PCT Article 19 (35 USC 371(c)(3)).
9. ☐ An oath or declaration of the inventor(s) (35 USC 371(c)(4)).
10. ☐ An English language translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 USC 371(c)(5)).
11. Nucleotide and/or Amino Acid Sequence Submission
 - a. ☐ Computer Readable Form (CRF)
 - b. Specification Sequence Listing on:
 - i. ☐ CD-ROM or CD-R (2 copies); or
 - ii. ☐ Paper Copy
 - c. ☐ Statement verifying identity of above copies

Items 12 to 19 below concern other document(s) or information included:

12. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
 - ☐ Form PTO-1449
 - ☐ Copies of References (except for U.S. patents and applications)
13. ☐ An assignment for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
14. ☒ A **FIRST** preliminary amendment.
 - ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
15. ☐ A substitute specification.
16. ☐ A change of power of attorney and/or address letter.
17. ☒ Application Data Sheet Under 37 CFR 1.76
18. ☒ Return Receipt Postcard
19. ☐ Other items or information:

U.S. APPLICATION NO. 60/516,148		INTERNATIONAL APPLICATION NO. PCT/US2004/35651		ATTORNEY DOCKET NO. 502972-PCT-US-C		CLIENT REF. NO. 03-2285C-US	
20. The following fees are submitted:						CALCULATIONS	PTO USE ONLY
<input checked="" type="checkbox"/> National Stage Filing Fee						\$300.00	
Search Fee						\$100.00	
<input checked="" type="checkbox"/> USPTO was ISA				\$100.00			
<input type="checkbox"/> Search report provided to USPTO by other entity				\$400.00			
<input type="checkbox"/> All other situations				\$500.00			
Examination Fee						\$100.00	
<input checked="" type="checkbox"/> US was IPEA and all claims satisfy PCT Article 33(1)-(4)				\$100.00			
<input type="checkbox"/> All other situations				\$200.00			
ENTER APPROPRIATE BASIC FEE AMOUNT=						\$500.00	
<input type="checkbox"/> Claim Fee							
CLAIMS		NUMBER FILED		NUMBER EXTRA		RATE	
Total Claims		9 -20=		0		x \$ 50.00	
Independent Claims		2 - 3 =		0		x \$200.00	
<input type="checkbox"/> Multiple Dependent Claim(s) (if applicable)				+\$360.00		\$	
<input type="checkbox"/> Application Size Fee (\$250 for each additional 50 sheets over 100)						\$	
<input type="checkbox"/> Surcharge of \$130.00 for furnishing the National fee or oath or declaration later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date.						\$	
TOTAL OF ABOVE CALCULATIONS=						\$500.00	
<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above are reduced by 1/2.						\$()	
SUBTOTAL=						\$500.00	
<input type="checkbox"/> Processing fee of \$130.00 for furnishing English Translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date.						\$	
TOTAL NATIONAL FEE=						\$500.00	
<input type="checkbox"/> Fee for recording the enclosed assignment. The assignment must be accompanied by an appropriate cover sheet. \$40.00 per property.						+	
TOTAL FEE=						\$500.00	
						Amount to be: refunded	\$
						charged:	\$
<p>a. <input type="checkbox"/> No fee is believed to be due.</p> <p>b. <input checked="" type="checkbox"/> Please charge Deposit Account No. 50-3505 the total fee indicated above.</p> <p>c. <input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 50-3505. A duplicate copy of this sheet is enclosed.</p>							
<p>NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.</p>							
<p>SEND ALL CORRESPONDENCE TO CUSTOMER NO. 53609:</p> <p style="text-align: center; font-size: 1.2em;">53609</p>				<p style="text-align: center;"></p> <p>Kevin L. Wingate, Registration No. 38662 Reinhart Boerner Van Deuren P.C. 483 North Mulford Road, Suite 7 Rockford, Illinois 61104 (815) 484-1900 (telephone) (815) 484-1032 (facsimile) Date: April 21, 2006</p>			

CERTIFICATION UNDER 37 CFR 1.10

"Express Mail" Label Number: EV 746146261 US

Date of Deposit:

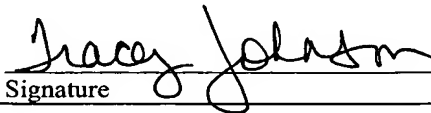
April 21, 2006

I hereby certify that this transmittal document with respect to the U.S. national phase of the above-referenced International Patent Application, including all of the items listed thereon as enclosures, is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" Service under 37 CFR 1.10 on the date indicated above and is addressed to Mail Stop PCT, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Tracey Johnson

Printed Name of Person Signing:

Signature

A handwritten signature in cursive script, appearing to read "Tracey Johnson", written over a horizontal line.

U.S. Patent and Trademark Office Randolph Building 401 Dulany Street Customer Service Window Mail Stop PCT Alexandria, VA 22314		ATTORNEY DOCKET NO. 60/516,148 PCT-US
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 USC 371 AND 37 CFR 1.491		CLIENT REF. NO. 03-2285C-US
INTERNATIONAL APPLICATION NO. PCT/US2004/35651	INTERNATIONAL FILING DATE October 27, 2004	U.S. APPLICATION NO. 60/516,148 PRIORITY DATE CLAIMED October 31, 2003
TITLE OF INVENTION METHOD AND APPARATUS FOR CONTROLLING EXHAUST GAS RECIRCULATION AND START OF COMBUSTION IN RECIPROCATING COMPRESSION IGNITION ENGINES WITH AN IGNITION SYSTEM WITH IONIZATION MEASUREMENT		
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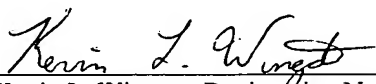
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TOTAL FEE=						\$500.00	
						Amount to be:	
						refunded	\$
						charged:	\$

- a. ☐ No fee is believed to be due.
- b. ☒ Please charge Deposit Account No. 50-3505 the total fee indicated above.
- c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 50-3505. A duplicate copy of this sheet is enclosed.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO CUSTOMER NO.
53609:

53609


 Kevin L. Wingate, Registration No. 38662
 Reinhart Boerner Van Deuren P.C.
 483 North Mulford Road, Suite 7
 Rockford, Illinois 61104
 (815) 484-1900 (telephone)
 (815) 484-1032 (facsimile)
 Date: April 21, 2006

CERTIFICATION UNDER 37 CFR 1.10

"Express Mail" Label Number: EV 746146261 US

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April 21, 2006

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Tracey Johnson

Printed Name of Person Signing:

Tracey Johnson
Signature

Application Data Sheet

APPLICATION INFORMATION

Application Type:: Regular
Subject Matter:: Utility
Suggested classification::
Suggested Group Art Unit::
CD-ROM or CD-R?:: None
Number of CD Disks:
Number of Copies of CDs::
Sequence Submission?::
Computer Readable Form (CRF)?:: No
Number of Copies of CRF::
Title:: METHOD AND APPARATUS FOR CONTROLLING
EXHAUST GAS RECIRCULATION AND START OF
COMBUSTION IN RECIPROCATING COMPRESSION
IGNITION ENGINES WITH AN IGNITION SYSTEM WITH
IONIZATION MEASUREMENT
Attorney Docket Number:: 502972-PCT-US-C
Request for Early Publication?:: No
Request for Non-Publication?:: No
Suggested Drawing Figure::
Total Drawing Sheets::
Small Entity?:: No
Latin Name::
Variety denomination name::
Petition Included?:: No
Petition Type::
Licensed US Govt. Agency::
Contract or Grant Numbers::
Secrecy Order in Parent Appl.?:: No

APPLICANT INFORMATION

Applicant Authority Type:: Inventor
Primary Citizenship Country:: US
Status:: Full Capacity
Given Name:: Ed
Middle Name::
Family Name:: VanDyne
Name Suffix::
City of Residence:: Loveland
State or Prov. of Residence:: CO
Country of Residence:: US
Street of mailing address:: 2604 Farisita Drive

City of mailing address:: Loveland
State or Province of mailing address:: CO
Country of mailing address:: US
Postal or Zip Code of mailing address:: 80538
Inventor Authority Type:: Inventor
Primary Citizenship Country:: US
Status:: Full Capacity
Given Name:: Mark
Middle Name:: R.
Family Name:: Woolston
Name Suffix::
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State or Prov. of Residence:: MA
Country of Residence:: US
Street of mailing address:: 651 Main Street

City of mailing address:: Bolton
State or Province of mailing address:: MA
Country of mailing address:: US
Postal or Zip Code of mailing address:: 01740

CORRESPONDENCE INFORMATION

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Phone:: (815) 484-1900
Fax:: (815) 484-1032
E-mail Address:: rockmail@reinhardtllaw.com

REPRESENTATIVE INFORMATION

Representative Customer Number:: 53609

DOMESTIC PRIORITY INFORMATION

Application::	Continuity Type::	Parent Application::	Parent Filing Date::
This Application	National Stage of	PCT/US2004/35651	October 27, 2004
This Application	An application	60/516,148	October 31, 2003
	claiming the benefit		
	under 35 U.S.C.		
	119(e)		

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Ed VanDyne, et al.

Application No.: Not Yet Assigned

Art Unit: Not Yet Assigned

Examiner: Not Yet Assigned

Filed: April 21, 2006

For: METHOD AND APPARATUS FOR CONTROLLING
EXHAUST GAS RECIRCULATION AND START OF
COMBUSTION IN RECIPROCATING COMPRESSION
IGNITION ENGINES WITH AN IGNITION SYSTEM WITH
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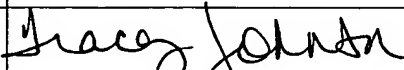
PRELIMINARY AMENDMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Prior to the examination of the above-identified application, please consider the following remarks.

Amendments to the claims are reflected in the claim listing which begins on page 2.
Remarks begin on page 4.

<i>CERTIFICATE OF MAILING OR TRANSMISSION UNDER 37 CFR 1.8</i>			
I hereby certify that this Preliminary Amendment and all accompanying documents are, on the date indicated below, <input checked="" type="checkbox"/> being deposited with the United States Postal Service as "Express Mail Post Office to Addressee" Service under 37 CFR 1.10 to: Mail Stop PCT, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.			
Name (Print/Type)	Tracey Johnson		
Signature		Date	April 21, 2006

CLAIM LISTING

1-35. (Cancelled)

36. (Original) An ion sensing apparatus for detecting ion current in a combustion chamber of a diesel engine comprising a spark plug for sensing ion current.

37. (Original) The ion sensing apparatus of claim 36 further comprising an ignition driver module for providing energy to the spark plug.

38. (Original) The ion sensing apparatus of claim 36 further comprising a control module, the control module including an ionization module for detecting and analyzing the ion current.

39. (Original) The ion sensing apparatus of claim 38 wherein the control module further includes a plasma driver for providing high energy sparks to the spark plug.

40. (Original) A method to cold start a reciprocating diesel engine in accordance with the spark plug of claim 36 comprising the step of providing sparks to the spark plug located in a combustion chamber of the reciprocating diesel engine wherein the energy of the sparks are of a sufficient magnitude to be able to ignite the diesel fuel mixture in the combustion chamber.

41. (Original) The method of claim 40 wherein the step of providing the sparks to the spark plug comprises providing high current sparks of a magnitude that keeps carbon build-up off the ceramic surfaces of the spark plug.

42-84. (Cancelled)

85. (Original) An apparatus that measures ionization in a direct injected engine having an injector, the apparatus comprising the injector adapted to sense ions, wherein the injector is insulated from ground and pulled to a negative voltage for ion sensing.

86. (Original) The apparatus of claim 85 further comprising a drive circuit for the injector that is isolated from the negative voltage.

In re Appln. Of: Ed VanDyne et al.
Application No.: Not Yet Assigned

87. (Original) The apparatus of claim 85 further comprising a drive circuit having a diode electrically connected to ground so as to flow positive voltage while holding back the negative voltage.

In re Appln. Of: Ed VanDyne et al.
Application No.: Not Yet Assigned

REMARKS

The applicants kindly request that the claim amendments indicated in the Claim Listing be entered prior to examination of the application. No claims have been amended. Claims 1-35 and 42-84 have been cancelled. No new claims have been added. Upon entry of the preliminary amendment, claims 36-41 and 85-87 remain pending in the application.

The application is considered in good and proper form for allowance, and the Examiner is respectfully requested to pass this application to issue. If, in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned attorney.

Respectfully submitted,



Kevin L. Wingate, Reg. No. 38662
Reinhart Boerner Van Deuren P.C.
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Rockford, Illinois 61107
(815) 484-1900 (telephone)
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